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*Supplementary Notice.*

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*Note accompanying a Chart of those Antarctic and Sub-Antarctic Regions which are suitable for observing the Transit of Venus in 1874.* By Richard A. Proctor, B.A. (Cambridge), Honorary Fellow of King's College, London.

To complete the processes of charting which I have thought it desirable and necessary to undertake in connexion with the Transit of 1874, I now present a chart of the regions where the duration of the transit will be considerably shortened.\* It will be observed that the map includes every point on the Earth's surface where the duration of the transit will be less than the mean duration by eight minutes, the Sun not being less than ten degrees high both at ingress and egress (internal contacts).

The chart requires no explanation beyond perhaps the remark that the islands in the less known regions have been taken from ordinary atlases (after comparison of several), in preference to the Admiralty charts; because, after certain withdrawals from opinions expressed in December 1868, one naturally feels doubtful about Admiralty statements, which would appear to be variable according to official requirements. It did not seem well to insert any island, or group of islands, in the chart, with some such note as, "Here, if convenient to those in authority, there is an island," or "This

\* To prevent misapprehension I feel it desirable to mention that none of the charts in this number have been engraved at the expense of the Society. This remark applies to Mr. Sidney Waters's beautiful and most valuable charts. As the Supplementary Number is the only one which does not receive the direct sanction of Council, the object of this note will be recognised, and no doubt its necessity will be perceived, by all Fellows resident in Great Britain whose election dates from before last February.

group of islands can be regarded as a reality or a myth, as may be required," and so on.

It will be perceived from the chart that Macdonald, or Heard Island (the only new observing station suggested in response to the advice of the Greenwich Board of Visitation), although well placed, is somewhat too near to Kerguelen Island to have favourable independent prospects of good weather. In other words, the occupation of this island will be useful, as increasing the number of Southern Halleyan stations and the value of the Southern observations as a whole, supposing weather to be favourable; but it is not a station which adds greatly to the probability of success, so far as success depends on conditions of weather.

I cannot conclude the statement of my views respecting the approaching transit without renewing the expression of regret that the transit of 1874 should not have been correctly viewed from the beginning by the persons responsible for England's action in astronomical matters. We do not know precisely what would have happened in that case; though we can infer from what was (mistakenly) suggested as proper for the transit of 1882, that a course would have been pursued which could not but have reflected credit on this country, both as respects scientific zeal and the spirit of enterprise. That an unfortunate mistake, admitted too late, should have led to such an anomalous state of things that British official astronomy and British nautical authority find it necessary, "with a common understanding, and therefore with considerable effect," to make little of opportunities whose importance they once fully and publicly recognised (in a precisely corresponding case), is grievously to be regretted. To the earnest student of science it must also be a cause of serious regret that such opportunities should be wasted. But while as an Englishman and as a student of science I must needs share in these regrets, those mistake who imagine that in a personal sense I regard with any feeling but the most complete indifference the action of persons responsible for advising our Government in this matter. *Whatever justification my researches and appeals may have seemed to require has been afforded by the unanimous vote of the leading British astronomers assembled at the Greenwich Board of Visitation.* Those astronomers doubtless feel, as I have long felt, that it is *hereafter*, and not perhaps till many years hence, that final judgment will be formed on the matters which have been under discussion. Such judgment will be based, not on the skill with which official influence may have been exercised to check the action of a too profusely liberal government, but on the care and accuracy with which the questions at issue have been weighed in their scientific aspect. Posterity, in considering the course of the astronomers of this country, will inquire whether their advice was sound, not whether it received due attention—a point which can only affect those responsible for conveying such advice to the proper quarter. *In*

*fine, I apprehend that in after years it will be thought worthier to have indicated, even if ineffectually, the proper course, than to have adopted effectual measures to prevent the proper course from being carried out.*

*Further Notes on Star-Gauging. and on the Principles on which its Interpretation should depend.* By R. A. Proctor, B.A. Honorary Fellow of King's College.

From communications which have reached me, I am disposed to believe that some misapprehensions probably exist respecting the nature and objects of the processes of star-gauging which I have suggested as forming at present the best available means for determining the laws according to which the stellar universe is constituted. I therefore add some remarks which may be of use in explaining my views.

First, the great object of star-gauging with any given instrument is to ascertain how many stars *that instrument* shows in each portion of the heavens,—when the sky is clear and dark, and there is no twilight, moonlight, or other cause of variation in space-penetrating power. Great exactness in enumeration is by no means necessary. In fact, the effort to secure great exactness would certainly, by extending the time necessary for the work of survey, defeat the whole object of the work. What is required is a complete but rapidly effected survey, bearing the same relation to the actual charting of stars, that the reconnaissance of a land region bears to trigonometrical survey.

In interpreting results, attention must be directed, *first*, to the numerical distribution indicated by each particular instrument, such distribution being presented to the eye by the process of equal-surface charting; and, *secondly*, to the differential results indicated when a survey by any given instrument is compared with a survey by another instrument of greater or less space-penetrating power.

Unless both these orders of indication are considered, the star-gauging can afford no satisfactory information. This will be manifest if it be remembered that according to my views,—and I think I may say, according to the results I have demonstrated by equal-surface charts already constructed,—the great difficulty in all researches into the construction of the heavens consists in distinguishing the effects of star-distribution resulting, on the one hand, from great extension in the line of sight with consequent great variation in the apparent magnitude of stars of the same order, and on the other hand from the aggregation of many orders of real magnitude within one and the same region. These, of course, are only the extreme cases, and in nearly every instance, if not absolutely in every instance, both causes of varying apparent magnitude and closeness of aggregation are effective.